

**Claims**

What is claimed is:

- 5     1. A method comprising generating a reference velocity to control a moveable arm, wherein the reference velocity is based on a function that causes a first derivative with respect to time of the reference velocity to vary linearly with respect to time.
- 10    2. The method of claim 1, wherein the function may be expressed as a distance to be traveled, divided by a remaining seek time and multiplied by a constant.
- 15    3. The method of claim 1, wherein the function is a first function, wherein the reference velocity is initially determined in accordance with a second function, and wherein the reference velocity is determined in accordance with the first function in response to the moveable arm reaching a position that is within a pre-designated distance from target position.
- 20    4. An apparatus comprising:  
        a moveable assembly; and  
        circuitry having an output lead and coupled to control the moveable assembly, wherein the circuitry is adapted to generate a command signal responsive to a reference velocity and provide the command signal on the  
25    output lead, wherein the reference velocity is determined in accordance with a function that causes a first derivative with respect to time of the reference velocity to vary linearly with respect to time.

5. The apparatus of claim 4, wherein the function may be expressed as a distance to be traveled, divided by a remaining seek time and multiplied by a constant.
- 5 6. The apparatus of claim 4, wherein the function is a first function, wherein the reference velocity is initially determined in accordance with a second function that is distinct from the first function, and wherein the reference velocity becomes determined in accordance with the first function in response to the moveable assembly reaching a position that is  
10 within a pre-designated distance from a desired position.
7. The apparatus of claim 4 further including a motor that is controlled by the circuitry and is adapted to move the moveable assembly.
- 15 8. The apparatus of claim 7 further including a storage medium where the moveable assembly is moved relative to the storage medium.
9. The apparatus of claim 4, wherein the circuitry includes a stored-program computing device.
- 20 10. The apparatus of claim 4, wherein the moveable assembly includes a transducer, is configured to rotate about an axis and moves the transducer with respect to a plurality of tracks by rotating about the axis.
- 25 11. The apparatus of claim 4, wherein the moveable assembly is configured to reposition the transducer with respect to the plurality of tracks by moving linearly in a radial direction with respect to the storage medium.

12. A method comprising:

determining a reference velocity based on at least a current position of a moveable arm;

5 comparing a current velocity of the moveable arm with the reference velocity to generate an error signal;

combining the error signal with a compensation signal to generate a command signal, wherein the compensation signal is derived from a current acceleration; and

10 applying the command signal to move the moveable arm, wherein the reference velocity is determined in accordance with a function that causes a first derivative with respect to time of the reference velocity to vary linearly with respect to time.

13. The method of claim 12 further comprising the steps of:

15 determining the current velocity of the moveable arm;  
determining a current position of the moveable arm; and  
determining the current acceleration of the moveable arm.